F. G. STIMSON.

BATTERY HAND LAMP.

APPLICATION FILED OCT. 20, 1921.

1,433,570. **Patented Oct. 31, 1922.**

Fig. 1

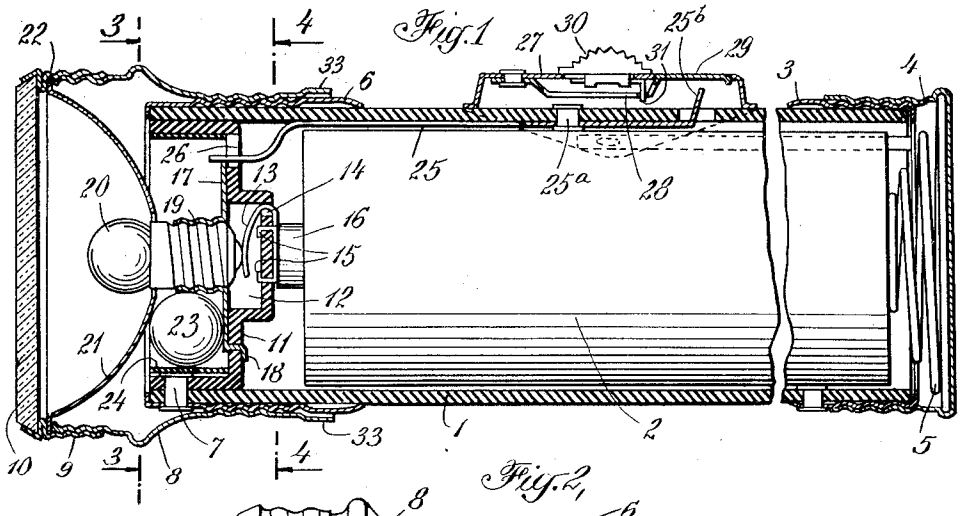


Fig. 2

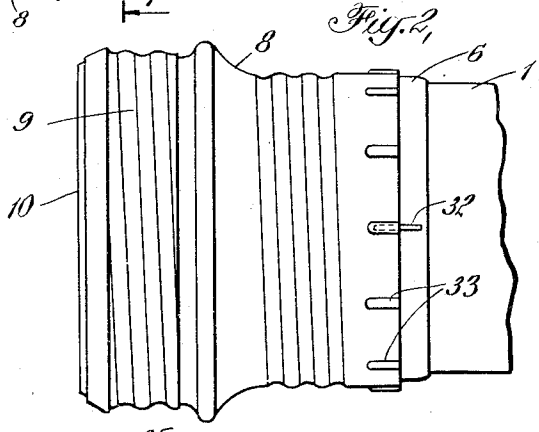


Fig. 3

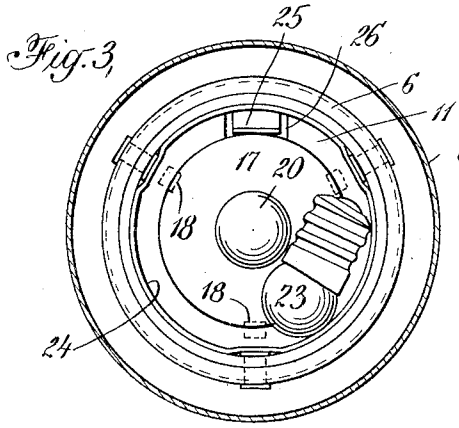
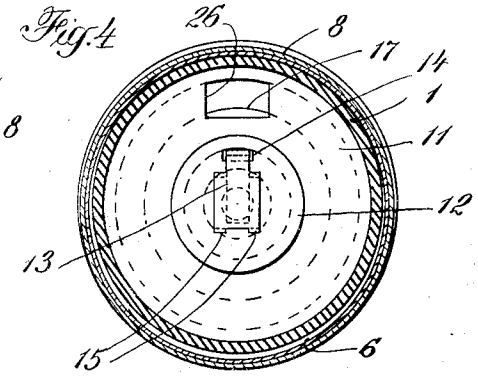


Fig. 4



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Patented Oct. 31, 1922. 1,433,570

UNITED STATES PATENT OFFICE.

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BATTERY HAND LAMP.

Application filed October 20, 1921. Serial No. 508,989.

To all whom it may concern:

Be it known that I, FRANK G. STIMSON, a citizen of the United States, residing at New Haven, in the county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Battery Hand Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to battery hand lamps of the type in which the distribution of light from the lamp can be altered to suit the needs of the user.

In accordance with the present invention, the reflector for the lamp can be moved relatively to the lamp bulb and its socket to alter the spread of the projected light and to produce, when desired, a beam of substantially parallel rays adapted for projections to a distance of several hundred feet.

In the preferred embodiment of the invention, the inner and fragile terminal of the lamp is protected from destructive thrust of the upper battery terminal and means is provided for the convenient storage of a spare bulb. Renewal of a worn out bulb is made easy, and the hand lamp has other useful and novel features as hereinafter pointed out more at length.

In the accompanying drawing—

Figure 1 is a sectional elevation of one embodiment of the present invention;

Fig. 2 is a fragmentary elevation of the front end of the hand lamp;

Fig. 3 is a section on the line 3—3 of Fig. 1; and

Fig. 4 is a section on the line 4—4 of Fig. 1.

In the preferred embodiment illustrated in the drawing, the hand lamp comprises a tubular casing 1, preferably of insulating material such as fiber, which serves as a container for a plurality of dry cells 2 placed end to end therein in the usual manner. At the bottom of casing 1 is a collar 3 and a bottom closure or end cap 4 threaded thereto and carrying a coil spring 5 which makes electrical connection with the naked bottom of the lowermost dry cell and which holds all of the dry cells in good electrical contact with one another and with the mechanism at the front end of the casing.

On the front end of the casing is a threaded flanged collar 6 held in place as by metal rivets 7. Threaded to this is a flaring metal head 8 threaded at its front end to receive a ring 9 in which a plain lens 10 is permanently mounted. The front end of the fiber casing is provided with a closure 11 held rigidly in position by rivets 7 and consisting of a cup of insulating material having a central depression 12. A leaf spring 13 housed in said depression has an extension which passes through said closure at 14 and is clamped against the bottom of the fiber cup by tangs 15 pressed up therefrom and inserted through openings in the fiber and clinched over, as shown in the drawing. The upper brass terminal 16 of the series of dry cells bears against the extension of spring 13 and thus establishes electrical connection therewith. Mounted on the top of said fixed closure is a metal plate 17 having fingers 18 passed through the bottom of the fiber cup and clinched over, as shown in the drawing, to hold the plate in position. Electrically connected with this plate and preferably integral therewith is a threaded lamp socket 19 in which a lamp bulb 20 is normally mounted with its inner terminal bearing against spring 13 and thus electrically connected with the battery. For best results, this lamp bulb should be of a type in which the tungsten filament is concentrated at approximately a point. Better results can be had from such a lamp than from those using the common S-shaped filaments.

Lamp 20 is provided with a reflector 21 approximately parabolic in contour and having at its front edge an outwardly extending flange 22 clamped between the lens supporting ring 9 and the front edge of head 8. This reflector is separate from lamp socket 19 and electrically insulated therefrom by a suitable air gap, and has an opening large enough to permit removal of head 8 and its supported parts without disturbing bulb 20 in its socket 19. In other words, the central opening of the reflector is larger than bulb 20.

The cup-shaped closure 11 is deep enough to form at the front end of the casing an annular compartment in which one or more spare lamp bulbs 23 can be stored and conveniently carried about. Preferably the cup is lined with a ring of paper 24, or other insulating material, so that the metal socket of a spare bulb 23 may not bridge the gap between the adjacent lamp socket 19 and one of the metal rivets 7 and thus expose the hand lamp to the danger of inadvertent lighting when laid down on a metal surface or placed in contact with metal tools. A stationary metal strip 25 is fastened to the casing by a rivet 25^a and has its bent front end introduced through an opening 26 in the insulating cup and yieldingly pressing against the edge of plate 17 and thus establishing connection with the outer terminal of lamp 20. The other end of strip 25 is provided with an outwardly bent finger 25^b which passes through a hole in the casing and is enveloped by a housing 27 to which is riveted a leaf spring 28, the free end of which is shaped to form a pan or thumb plate 29 opposed to finger 25^b and by which the flow of current to the lamp can be controlled. In the construction shown, this swinging contact element 28 can be held in permanent engagement with finger 25^b by first pressing it down and then sliding forward a roughened thumb piece 30 which carries the finger 31 adapted to disengage from a slot in element 28 and thereafter to slide along the outer face of that element and hold it in engagement with finger 25^b.

With the switch mechanism of the character described, the circuit can be momentarily closed, as for signaling with the Morse code, by a simple thumb pressure on the pan 29, or, if desired, the lamp can be burned continuously by first pushing inward on pan 29 and then sliding the thumb forward against element 30 to move finger 31 into such position that it will hold the spring element in circuit closing relation.

With the construction above described, particularly when using a lamp bulb in which the light-giving filament is confined to approximately a single point, the light rays can be sent out from reflector 21 through lens 10 substantially parallel to one another. The narrow beam of light so produced will carry to a long distance. If a wider beam is desired, the entire head of the lamp can be turned on threaded collar 6, thereby shifting the reflector with respect to the lamp filament and thereby changing the focus sufficiently to change the spread of the beam of light. This ease of adjusting the focal relation between the reflector and the lamp is also of value when a new lamp is substituted for one that has been burned out, for the lamps are not all alike, and the reflector adjustment best suited to lamp 20 is not necessarily the adjustment best suited to lamp 23.

To yieldingly lock the head in its adjusted position, collar 6 has pressed therein a projecting lug 32 (Fig. 2), and the lower edge of the metal head 8 is pressed outwardly to form a plurality of recesses for engagement with said lug to yieldingly lock the head against inadvertent rotation on said collar.

If the user desires a more diffused light than can be had by adjusting the reflector along the axis of the lamp bulb, it is possible to entirely unscrew and remove head 8 and its supported reflector and lens without disturbing the operative relation between the battery and lamp 20, and without even opening the circuit through the lamp. By this change the hand lamp is converted into what is in effect a battery candle, for the bulb of lamp 20 is positioned beyond the front edge of the casing and so is free to send its light in substantially all directions.

Various changes may be made in the form and relative location of the elements above described without departing from the spirit of the invention as defined by the appended claims.

I claim:—

1. In a battery hand lamp, a casing, a battery therein, an electric bulb and a reflector therefor mounted independently of each other in said casing, a threaded member on the front end of said casing, a reflector-supporting member threaded thereto and rotatable thereon to move said reflector axially and relatively to said bulb to alter the spread of the projected light, one of said members having a lug, and the other having a plurality of recesses pressed therein for engagement with said lug to yieldingly lock said lens-supporting member against inadvertent rotation on said threaded member, substantially as described.

2. In a battery hand lamp, an insulating casing, an electric bulb mounted in said casing, a threaded collar on the front end of said casing and having a projecting lug, a metal head threaded to said collar and having a plurality of recesses pressed therein for engagement with said lug to yieldingly lock said head against inadvertent rotation on said collar, and a reflector supported at the forward end of said metal head independently of said bulb, said reflector being movable axially and relatively to said bulb to alter the spread of the projected light, substantially as described.

3. In a battery hand lamp, a tubular insulating casing, a battery therein, a removable closure for one end of the said casing, a fixed insulating closure for the other end of said casing, an electric bulb mounted in

said fixed closure and insulated thereby, said insulating closure having a central depression in the bottom of which is mounted a spring contact member interposed between said bulb and said battery, a reflector adjustably mounted on the end of said casing for co-operating with said bulb, whereby the spread of the projected light rays may be altered at will, and means for closing and opening the electric circuit through said bulb and said battery at will.

4. In a battery hand lamp, a tubular casing, a battery therein, a closure of insulating material rigidly mounted in one end of said casing, a bulb secured thereto and having a threaded socket, an electric bulb mounted in said socket and insulated by said closure, a spring contact member interposed between said bulb and said battery, means for closing and opening the electric circuit through said bulb and said battery at will, a reflector mounted in said casing independently of said lamp and its socket, means whereby the relative longitudinal position of said bulb and said reflector may be varied for the purpose of altering the spread of the projected light, and means for yieldingly locking said reflector in any one of several positions to give the desired distribution of the light, substantially as described.

5. In a battery hand lamp, a tubular casing, a battery therein, a removable closure for one end of said casing, a closure of insulating material rigidly mounted in the other end of said casing, an electric bulb mounted in the said fixed closure and insulated thereby, means for closing and opening the electric circuit through said bulb and said battery at will, means whereby the spread of the projected light rays may be altered at will, said insulating closure having a central depression in the bottom of which is mounted a spring contact member interposed between said bulb and said battery, and a threaded metal socket for the reception of said bulb and having at its inner end an outwardly extending annular plate mounted upon the outer face of said insulating closure.

6. In a battery hand lamp, a tubular casing, a removable closure for one end of said casing, a fixed closure for the other end of said casing comprising an insulating cup-like member rigidly mounted in said casing, a spring centrally located in said insulating member, a metallic plate rigidly attached to said insulating member and having a forwardly projecting threaded socket, an electric bulb mounted in said socket and in contact with said spring, a battery in said casing with its forward pole contacting with said spring, means whereby the electric circuit through said bulb and said battery may be opened and closed at will, and means whereby the spread of the projected light rays may be altered at will.

7. In a battery hand lamp, a tubular casing, a battery therein, a removable closure for one end of said casing, a fixed closure for the other end of said casing, an electric bulb mounted in said fixed closure, a reflector adjustably mounted on the end of said casing for co-operation with said bulb whereby the spread of the projected light rays may be altered at will, and means for closing and opening the electric circuit through said bulb and said battery at will, the said fixed closure being rigidly mounted in said casing and comprising a cup of insulating material having a central depression, a metallic spring mounted in said depression and interposed between said bulb and said battery, and a threaded socket rigidly fastened to said cup and in which said bulb is mounted, substantially as described.

8. In a battery hand lamp, a tubular insulating casing, a battery therein, a removable closure for one end of said casing, a fixed closure for the other end of said casing, said fixed closure comprising a cup of insulating material having a central depression, a spring housed in said depression and having an extension passing through said closure and against which said battery presses, a metal plate mounted on the top of said fixed closure and having an outwardly projecting threaded socket, a lamp bulb in said socket, a switch mechanism by which the battery current is controlled, a stationary conductor leading from said metal plate to said switch mechanism, a reflector insulated from said socket and movable with respect thereto, a threaded collar on the front end of said casing and having a projecting lug, a metal head threaded to said collar and having a plurality of recesses pressed therein for engagement with said lug to yieldingly lock said head against inadvertent rotation on said collar, and a lens for said lamp, said lens and reflector being supported at the forward end of said metal head and being movable therewith to change the spread of of the light from said lamp, substantially as described.

9. In a battery hand lamp, the combination of a casing, a cup of insulating material closing the front end of said casing, a lamp socket carried by said cup, and a reflector for the lamp, said insulating cup being of a size to provide storage space for a spare lamp bulb beneath said reflector and at the side of said lamp socket.

In testimony whereof I affix my signature.

FRANK G. STIMSON.